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AUTHOR Zuckerman, June Trop
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ABSTRACT

This paper aims to demonstrate how listening to and discussing the stories inservice science supervisors tell about a novice science teacher provides an opportunity for student science teachers to construct practical knowledge about teaching. Three levels of practical knowledge of teaching are recognized: (1) rules of practice; (2) practical principles; and (3) images. During individual audiotaped interviews, inservice science supervisors were asked to "Tell me a story about a novice science teacher you've supervised." Thirty-two student teachers listened to the stories, discussed them, and then individually wrote what they came to know from the exercise. A list was made of all the student teachers' comments that embodied a rule, principle, or image. The various pieces of practical knowledge that the student teachers constructed cohered around four themes: the complex nature of teaching; planning and implementing lessons; professional improvement and growth; and the character, personality, and style of a teacher. Contains 20 references. (DDR)

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Inservice Science Supervisors' Stories: A Source of Practical Knowledge for Student Science Teachers

June Trop Zuckerman

The State University of New York at New Paltz

Department of Secondary Education

Old Main 204

The State University of New York at New Paltz

75 South Manheim Boulevard, Suite 8

New Paltz, NY 12561-2442, USA

ZUCKERJT@NPVM.NEWPALTZ.EDU

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INSERVICE SCIENCE SUPERVISORS' STORIES: A SOURCE OF PRACTICAL KNOWLEDGE FOR STUDENT SCIENCE TEACHERS

What practical knowledge about teaching can student teachers construct from the stories inservice supervisors tell? The term practical knowledge refers here to the insights derived from one situation that have an immediate application to other situations. Unlike theoretical knowledge, which is stripped of contextual details, practical knowledge is embedded in the specifics of complex and/or ambiguous situations (Kessels & Korthagen, 1996). Although practical knowledge is important to teachers (Ben-Peretz, 1995; Clandinin & Connelly, 1996; Kagan, 1992; Kessels & Korthagen, 1996; Veenman, 1984), teacher preparation programs, including student teaching, provide little if any opportunity to construct such knowledge (Bullough, 1989; Lieberman & Miller, 1992; Kagan, 1992; Lortie, 1975; Veenman, 1984).

Teachers are the source of practical knowledge about teaching (Lieberman & Miller, 1992), and they communicate this practical knowledge through their stories (Ben-Peretz, 1995; Carter, 1993; Clandinin & Connelly, 1996; Elbaz, 1991; Kessels & Korthagen, 1996; Schubert, 1992). In a story, the storyteller imposes order and coherence on a stream of events so that a community of listeners can construct meaning (Ben-

Peretz, 1995; Carter, 1993; Elbaz, 1991). Because stories also provide a context for both remembering and applying practical knowledge (Shulman, 1986), the practical knowledge student teachers construct from stories could be especially useful.

Accordingly, during one of their regularly scheduled seminars, student science teachers listened to and discussed the stories inservice science supervisors told about a novice science teacher they had supervised. The term inservice science supervisors refers here to those veteran science teachers with at least some responsibility for the professional development of the novice science teachers in their department, school, or district. The term novice science teachers refers to inexperienced inservice science teachers, and the term student science teachers refers to preservice science teachers working under the immediate, temporary supervision of an inservice science teacher. Inasmuch as novice teachers and student teachers are in the same developmental stage, the early teaching phase (Fuller, 1969), the stories inservice supervisors tell about novice science teachers are likely to bear on the concerns student science teachers have about their efficacy as teachers.

The purpose of this paper is to demonstrate that listening to and discussing the stories inservice

science supervisors tell about a novice science teacher provides an opportunity for student science teachers to construct practical knowledge about teaching. Elbaz (1981) identified three levels of practical knowledge about teaching: rules of practice, practical principles, and images. A rule of practice is a piece of advice about a particular, frequently encountered teaching situation, whereas a practical principle is a more general statement about teachers or teaching. An image, the most abstract kind of practical knowledge, is a brief metaphorical statement that embodies a teacher's feelings, needs, values, and/or beliefs. Thus the paper undertaken here is a report on the rules of practice, practical principles, and images of teaching that student science teachers constructed from listening to and discussing the stories inservice science supervisors told about a novice science teacher.

Method

Collecting the Data

During individual, audiotaped interviews, inservice science supervisors from the public schools of New York State were asked to "Tell me a story about a novice science teacher you've supervised." All of their stories were first-person accounts of supervising a novice science teacher who had some professional difficulty (Zuckerman, 1998). Three of their stories,

each running approximately two minutes, were selected for this study. (See Appendices A, B, and C for a slightly edited transcription of each story.)

The student teachers were preparing for New York State provisional certification to teach science in grades 7-12. They heard the audiotapes of the stories during the 10th week of their student-teaching semester, during the fourth of six 75-minute seminars held regularly throughout that semester. Thirty-two student teachers, that is, three cohorts of approximately 10 student teachers, generated the data for this study.

After listening to each story, the student teachers were directed to arrange themselves into groups of three or four, discuss the story for five minutes, and then individually write what they came to know from listening to and discussing the story.

Analyzing the Responses

The responses to the stories were analyzed for Elbaz's (1981) rules of practice, practical principles, and images of teaching. A rule of practice was identified whenever a student teacher gave advice, implicitly or explicitly, about what teachers should do or how they should do it. A practical principle was identified whenever a universal statement (not embodying a piece of advice) was made about teachers or teaching. An image was identified whenever a metaphorical

expression was used to describe a teacher or teaching situation.

Next, for each story, a list was made of all the student teachers' comments that embodied a rule, principle, or image. If there were various expressions of a particular rule or principle, they were consolidated into a composite statement of that rule or principle. Finally, the rules were recast in the form of a command. For example, the following comments embodying a rule were consolidated and then recast into this command: Don't deny or try to hide your mistakes.

- "Denying a mistake or trying to cover it up usually results in losing the respect of the students."
- "If you make a mistake, don't try to hide it or be ashamed of it."

Results

All 32 student teachers constructed rules of practice, practical principles, and/or images of teaching in response to each of the three stories. (See Tables I, II, and III for the practical knowledge constructed in response to each story.) Among the 49 different pieces of practical knowledge, 1 rule from the first story, 2 rules from the second story, and 2 principles from the third story were each constructed by more than a third of the student teachers.

One Rule from the First Story

Twenty-three student teachers came to know that they should be receptive to their supervisor's criticisms (see Table I, Rule of Practice 1). They warned the others "that as a novice teacher, you should always accept criticism as constructive criticism, especially when it comes from the boss," and "especially before getting tenure." "Criticism must be viewed as an opportunity for growth," even though "it can be hard to take," because "it benefits the students as well as the teacher." Therefore, "teachers need to look at the negative as well as the positive comments." If they don't, it could cost them their job.

Two Rules from the Second Story

Thirteen student teachers came to know that they can learn to compensate for or otherwise overcome their weaknesses (see Table II, Rule of Practice 1). In other words, they can "turn the negative feedback into a positive response" so their "weaknesses can become strengths." Accordingly, "handicaps such as a language problem can be turned into assets."

Another set of thirteen student teachers came to know that they need to develop a sense of humor and be able to laugh at themselves (see Table II, Rule of Practice 6). Some advised: "Develop or maintain a sense of humor by laughing with others" because "if you

laugh with them, they can't laugh at you." In fact, "it's okay to make fun of yourself in front of a class to get them motivated." In short, "humor, when used appropriately, can be a useful tool in the classroom" because "being able to laugh at oneself or at funny statements made by kids... allows you to acknowledge the human side."

Two Principles from the Third Story

Eighteen student teachers came to know that "knowledge of subject and a love of children are the most important things for a teacher to have, [whereas] the techniques and methods of being an effective teacher can be learned" (see Table III, Practical Principle 1). In fact, "the technique or style of teaching can be developed more easily when those two factors [knowledge of subject and love of children] are present" because "the technique will come as a by-product of the other two elements."

Similarly, 16 student teachers came to know that the essential characteristic of a good teacher is a genuine regard for students (see Table III, Practical Principle 2). They described this genuine regard as a "natural love," "something inside yourself which enables you to relate to the kids," and a "caring for your students" so that relationships develop "based on trust and faith as opposed to fear and intimidation." In other words, "it

must be important to you that you are making a difference in a child's life."

Discussion

Themes of Practical Knowledge

The various pieces of practical knowledge that the student teachers constructed cohered around four themes: the complex nature of teaching; planning and implementing lessons; professional improvement and growth; and the character, personality, and style of a teacher. These themes are congruent with the concerns identified as typical and appropriate for teachers in the early teaching phase, namely concerns about their own survival and adequacy as teachers (Bullough, 1989; Fuller, 1969; Fuller & Brown, 1975; Kagan, 1992; Ryan, 1986).

The complex nature of teaching. The student teachers constructed practical principles and images about the complex nature of teaching in response to all three stories, but especially in response to the first story. (See Table I, Practical Principles 1 and 2 and Images 1-4. Also see Table II, Practical Principle 1 and Table III, Image 1.) Individual student teachers saw teaching like a juggling act, the problems like recurring weeds, and a teacher like someone who has been thrown naked into a tank of sharks. Consistent with these images, they came to know that there is no perfect teacher, it

is normal to forget things, and it takes a long time to feel confident.

In fact, most teachers in the early phase of teaching find teaching to be more complex than they ever expected. Based on the limited and naive perspective of their own school days, they continue to maintain a simplistic conception of teaching which, along with the widespread notion that "anyone can teach," contributes to their "reality shock" (Lortie, 1975; Veenman, 1984; Weinstein, 1988).

Planning and implementing lessons. In response to the first two stories, the student teachers constructed four rules of practice and two practical principles about planning and implementing lessons (see Table I, Rules of Practice 9-12 and Practical Principle 3 and Table II, Rule of Practice 5 and Practical Principle 3). Essentially they came to know that they need to motivate and engage their students so as to have a well-managed class. In fact, teachers in the early phase of teaching regularly identify motivating their students and managing the class as their primary concerns (Bullough, 1989; Kwo, 1996; Veenman, 1984).

Professional improvement and growth. The student teachers constructed practical knowledge about professional improvement and growth in response to the first two stories. (See Table I, Rules 1-8 and Table

II, Rules 1-4, Principle 2, and Images 1-4.) They came to know that they are responsible for their own improvement, although they can expect their colleagues and supervisor to be supportive. Accordingly, they made specific suggestions about how to effect self-improvement, such as by keeping a journal, making audio- and/or videotapes of their lessons, and asking colleagues, including their supervisor, for help. Similarly, other researchers have found that teachers in the early phase of teaching are concerned about meeting the expectations of both their supervisor and their pupils (Fuller, 1969; Fuller & Brown, 1975).

The character, personality, and style of a teacher. The student teachers responded to the second and third stories with practical knowledge about the character, personality, and style of a teacher. (See Table II, Rules of Practice 6-9 and Images 5 and 6; and Table III, Rules of Practice 1-3, Practical Principles 1-4, and Images 2-5.) They came to know that teachers should be authentic, honest, and modest, and they should care (and demonstrate that they care) about their students. They should also know their subject, love teaching and learning, and have a sense of humor. Finally, they should develop a distinctive and enthusiastic teaching style.

The student teachers' focus on the character, personality, and style of a teacher is not surprising. Without a codified body of practical knowledge and a reliable way to judge the difficulty of various teaching tasks, student teachers understandably attribute a teacher's success (or failure) in a particular situation to such affective variables (Lortie, 1975; Pajares, 1992; Weinstein, 1988).

Thus listening to and discussing the stories inservice science supervisors told about a novice science teacher provided an opportunity for student science teachers to construct practical knowledge relevant to their concerns as teachers in the early teaching phase. In fact, the construction of this practical knowledge is crucial because it is only after teachers have resolved the concerns they have about their own survival and adequacy that they can turn elsewhere and concentrate on what their pupils are learning (Kagan, 1992).

Implications

Teacher educators need to provide opportunities for their student teachers to systematically explore the details of complex and/or ambiguous teaching situations. Listening to the stories inservice supervisors tell about novice teachers provides such an opportunity. Subsequent small-group discussions then enable the

student teachers to identify the details that distinguish each storied situation so they can appropriately apply the practical knowledge to other situations (Kessels & Korthagen, 1996). Moreover, by attending to the practical knowledge their student teachers are constructing, teacher educators can identify and address the particular concerns individual student teachers have about their own survival and adequacy.

Questions for Future Research

Teachers' concerns change as they advance through the various stages of development (Fuller, 1969; Ryan, 1986). What rules, principles, and images of teaching would somewhat more experienced teachers construct in response to these same three stories? in response to other stories? More importantly, how can teacher educators enhance the likelihood that their student teachers will remember and apply the pieces of practical knowledge they construct in response to a story?

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Table I

Practical Knowledge that Student Teachers Constructed from the First Story

Rules of Practice (Number of Student Teachers)
1. Be receptive to criticism, especially when it comes from your supervisor. (23)
2. Strive for improvement that is enduring and cumulative. (5)
3. Keep a journal to reflect on the areas that you need to improve. (3)
4. Reflect regularly on your performance and assess it realistically. (2)
5. Ask other teachers for suggestions on how to overcome your weaknesses. (1)
6. Invite a senior colleague to assess your performance before your supervisor evaluates you. (1)
7. Study your entire evaluation, develop an action plan that addresses your weaknesses, and then review the plan with your supervisor. (1)
8. Hear someone's criticism, but then don't think about it until the end of the day. (1)
9. Get all your students involved in the lesson, not just the few who are active and enthusiastic. (4)

(table continues)

Table I (Continued)

Rules of Practice (Number of Student Teachers)
10. Do a group activity to get your students motivated and on task. (2)
11. Get advice on planning from your senior colleagues. (2)
12. Spend more time walking around the room and less time in front of the class. (1)
Practical Principles (Number of Student Teachers)
1. Teaching involves the execution of many complex tasks. (6)
2. No teacher is perfect. (2)
3. Effective classroom management is necessary for getting tenure. (2)
Images (Number of Student Teachers)
1. It is easy to forget about one thing when we get tangled up in the confusions of a school day. (1)
2. A teacher needs to see the whole picture when teaching a lesson and managing the classroom. (1)

(table continues)

Table I (Continued)

Images (Number of Student Teachers)
3. Teaching is a juggling act. (1)
4. Problems in the classroom are like weeds; they will keep coming back if they are not tended to on a regular basis. (1)

Table II

Practical Knowledge that Student Teachers Constructed from the Second Story

Rules of Practice (Number of Student Teachers)
1. Learn to compensate for or otherwise overcome your weaknesses. (13)
2. Make audio- or videotapes of yourself to assess your strengths, weaknesses, and improvement. (8)
3. Identify your shortcomings and improve. (3)
4. Keep a journal to analyze your strengths and weaknesses. (2)
5. Be creative when developing a lesson, especially the motivation. (8)
6. Develop a sense of humor and be able to laugh at yourself. (13)
7. Develop your own teaching style. (4)
8. Don't deny or try to hide your mistakes. (2)
9. Be appropriately modest. (1)
Practical Principles (Number of Student Teachers)
1. Feeling confident with all of a teacher's roles takes a long time. (1)

(table continues)

Table II (Continued)

Practical Principles (Number of Student Teachers)
2. Even veteran teachers can learn from their novice teacher colleagues. (4)
3. There are various ways to get the students' attention. (1)
Images (Number of Student Teachers)
1. A rough start does not necessarily mean a rough ending. (1)
2. When patching up professional holes, sometimes the patch is stronger than the original material. (1)
3. Some people are not content settling for mediocrity. They push themselves to achieve the highest level possible. (1)
4. Handicaps such as a language problem can be turned into assets. (1)
5. Humor, when used appropriately, can be a useful tool in the classroom. (1)
6. Like apprentices learning from craftsmen, teachers bring their own personalities and imaginations into their work. (1)

Table III

Practical Knowledge that Student Teachers Constructed from the Third Story

Rules of Practice (Number of Student Teachers)
1. Let your students know that you are interested in what they do outside of class. (1)
2. Help your students after school, even with their other subjects. (1)
3. Develop your own teaching style. (1)
Practical Principles (Number of Student Teachers)
1. A novice teacher's knowledge of subject and love for kids are more important than technique, which can be learned over time. (18)
2. The essential characteristic of a good teacher is a genuine regard for students. (16)
3. Student who know that you care are willing to work hard for you. (2)
4. Students can tell whether a teacher is authentic. (2)

(table continues)

Table III (Continued)

Images (Number of Student Teachers)
1. Throwing a naked person into a shark tank and expecting survival is an iffy proposition at best. (1)
2. Motivation is the key ingredient or glue that binds a teacher's skills together. (1)
3. It is this exchange of energy, this love, that is rewarding for any professional in the people business. (1)
4. Sharing the passion for understanding is the core of teaching. (1)
5. Love of teaching is a passion composed of your feelings for the kids you teach and your thirst for subject matter knowledge. This love is the magic that sparks a great lesson, and then another. (1)

Appendix A: Transcription of the First Story

We had a lady here who was a very bright and personable woman. The kids loved her, but she'd get in front of the room and let the kids distract her. Some kids would be doing their homework for another class; others would be doing their nails. But she thought she was doing a marvelous job because she did a great job with four or five of the kids. So you'd bring that to her attention, and she would nod her head at you. "Yes, yes, I understand. I understand." You'd say, "All right now. The next time I come in, that's the one thing I'm going to look at."

You'd come in the next time, and she might have fixed it, but the time after that, it would be there again. She couldn't bring all the pieces together. When you'd ask her to work on something else, the first problem would come back. She never could put the pieces together.

And so when she wasn't given tenure and lost her job here, she felt terrible. But she never heard, really heard. She went to the next school and sent us back her first observation and evaluation. I read the first page, and then when I read the second page, I said, "She's not gonna get tenure there either because here is the whole first page all positive and then, on the second page, it asks her to look at something." And I said, "I know what's happening to her. She's reading the first page because it's all positive, but she's sending this to us without even realizing what the second page says."

So the same thing happened to her there. She was there three years and didn't get tenure there either. She just never heard.

Appendix B: Transcription of the Second Story

I have a teacher in my department who started out as my student teacher. She was very unsure of herself because she speaks with a heavy French accent. When she first started to student teach, she was not sure that the class would understand her, and quite frankly, I was not sure either. She turned out, however, to be a wonderful, lively teacher.

One of the things that she did early on was to make an audiotape of her own lessons, and the first time she heard her voice, she almost cried. But then she worked on it, and realizing that she had this accent, started to compensate by using the board more. She also learned to laugh at herself, which I think is one of the wonderful techniques that a teacher has to use.

She has taught me a lot and has also brought a lot of life to our department. For one thing, she comes up with some very weird motivations. When she was a student teacher teaching a lesson on reflexes, she caught her finger in a drawer, or so everybody thought, including her professor, who came running up very upset. At any rate, she pretended to catch her finger in the drawer and started cursing first in French and then in English. That really got the class involved.

She has really grown into a wonderful, creative teacher who now teaches our research class, and what is very interesting to me is that I started out as her advisor, and now we have very much switched roles. In fact, when I walk into her research class in the middle of a discussion and I feel I have something to contribute, she makes me keep my mouth shut. She says, "No, no. You're not supposed to say anything. You're just here to listen." So, it's really good.

Appendix C: Transcription of the Third Story

I'll tell you a very satisfying story about Tom. I needed a physics teacher because one had suddenly left the district at the beginning of the year. Physics teachers were at a premium. So I called Tom. He had no teaching experience. In fact, he had just finished studying to be an engineer but had decided that he wanted to teach instead.

I met Tom on the steps. We signed him up as a long-term sub. I remember speaking to him, saying "Tom, you don't have to go into teaching. There are more lucrative jobs out there as an engineer." But he said no. He'd given it some thought, and he wanted to give it a shot.

I brought him down to the high school, and his first class was an AP physics class. The students--and their parents--were very demanding. When Tom first started, he didn't even know how to write on the board with chalk, but he knew his physics and I could tell that he loved kids. But he didn't know a thing about teaching. Three or four years later he received his tenure, and in the fifth year, the National Honor Society voted him Teacher of the Year.

Going back now, here's a person that I had to teach to crawl before he could walk, but he had a love of students. He had that little something that students grab onto, and he, in turn, grabbed onto them. And he had knowledge of the subject. And to me, if you have those two, technique is just a matter of time. You can teach anybody technique, but you can't teach anybody to love children. And it's too late to learn the content if you've gone through college and didn't pick it up then.

So, I look at Tom as probably my fondest teaching experience because it was a very frustrating one, but an extremely satisfying one as well, to see someone go in on that first day who couldn't even write on the board. But then again, that was before I learned that technique is secondary, and those intrinsic values and knowledge of subject are the important things.